



## Operator's Manual

# DownFlex® 200/400



For use with machines having Code Numbers:

**K2751-2, K2751-3,  
K2751-6, K2751-8**



**Register your machine:**

[www.lincolnelectric.com/register](http://www.lincolnelectric.com/register)

**Authorized Service and Distributor Locator:**

[www.lincolnelectric.com/locator](http://www.lincolnelectric.com/locator)

**Save for future reference**

Date Purchased

Code: (ex: 10859)

Serial: (ex: U1060512345)

**IM10013-A** | Issue Date Nov-15

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**THE LINCOLN ELECTRIC COMPANY**

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Phone: +1.216.481.8100 • [www.lincolnelectric.com](http://www.lincolnelectric.com)

## THANK YOU FOR SELECTING A QUALITY PRODUCT BY LINCOLN ELECTRIC.

### PLEASE EXAMINE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

### SAFETY DEPENDS ON YOU

Lincoln arc welding and cutting equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation ... and thoughtful operation on your part.

**DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT.** And, most importantly, think before you act and be careful.



### WARNING

This statement appears where the information must be followed exactly to avoid serious personal injury or loss of life.



### CAUTION

This statement appears where the information must be followed to avoid minor personal injury or damage to this equipment.



### KEEP YOUR HEAD OUT OF THE FUMES.

**DON'T** get too close to the arc. Use corrective lenses if necessary to stay a reasonable distance away from the arc.

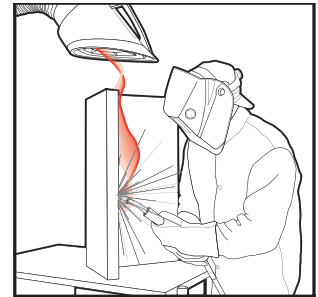
**READ** and obey the Material Safety Data Sheet (MSDS) and the warning label that appears on all containers of welding materials.

**USE ENOUGH VENTILATION** or exhaust at the arc, or both, to keep the fumes and gases from your breathing zone and the general area.

**IN A LARGE ROOM OR OUTDOORS**, natural ventilation may be adequate if you keep your head out of the fumes (See below).

**USE NATURAL DRAFTS** or fans to keep the fumes away from your face.

If you develop unusual symptoms, see your supervisor. Perhaps the welding atmosphere and ventilation system should be checked.



### WEAR CORRECT EYE, EAR & BODY PROTECTION

**PROTECT** your eyes and face with welding helmet properly fitted and with proper grade of filter plate (See ANSI Z49.1).

**PROTECT** your body from welding spatter and arc flash with protective clothing including woolen clothing, flame-proof apron and gloves, leather leggings, and high boots.

**PROTECT** others from splatter, flash, and glare with protective screens or barriers.

**IN SOME AREAS**, protection from noise may be appropriate.

**BE SURE** protective equipment is in good condition.

Also, wear safety glasses in work area **AT ALL TIMES.**



### SPECIAL SITUATIONS

**DO NOT WELD OR CUT** containers or materials which previously had been in contact with hazardous substances unless they are properly cleaned. This is extremely dangerous.

**DO NOT WELD OR CUT** painted or plated parts unless special precautions with ventilation have been taken. They can release highly toxic fumes or gases.

### Additional precautionary measures

**PROTECT** compressed gas cylinders from excessive heat, mechanical shocks, and arcs; fasten cylinders so they cannot fall.

**BE SURE** cylinders are never grounded or part of an electrical circuit.

**REMOVE** all potential fire hazards from welding area.

**ALWAYS HAVE FIRE FIGHTING EQUIPMENT READY FOR IMMEDIATE USE AND KNOW HOW TO USE IT.**



## SECTION A: WARNINGS



### CALIFORNIA PROPOSITION 65 WARNINGS

#### Diesel Engines

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

#### Gasoline Engines

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

**ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACE-MAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.**

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

**BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.**



### FOR ENGINE POWERED EQUIPMENT.



- 1.a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.
- 1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.
- 1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.



- 1.d. Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.



- 1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.
- 1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.
- 1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.
- 1.h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.



### ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS



- 2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines
- 2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.
- 2.c. Exposure to EMF fields in welding may have other health effects which are now not known.
- 2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
  - 2.d.1. Route the electrode and work cables together - Secure them with tape when possible.
  - 2.d.2. Never coil the electrode lead around your body.
  - 2.d.3. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.
  - 2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.
  - 2.d.5. Do not work next to welding power source.



## ELECTRIC SHOCK CAN KILL.



- 3.a. The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- 3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

**In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:**

- Semiautomatic DC Constant Voltage (Wire) Welder.
  - DC Manual (Stick) Welder.
  - AC Welder with Reduced Voltage Control.
- 3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.
  - 3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
  - 3.e. Ground the work or metal to be welded to a good electrical (earth) ground.
  - 3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
  - 3.g. Never dip the electrode in water for cooling.
  - 3.h. Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
  - 3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
  - 3.j. Also see Items 6.c. and 8.



## ARC RAYS CAN BURN.



- 4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87.1 standards.
- 4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- 4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



## FUMES AND GASES CAN BE DANGEROUS.

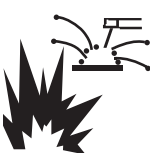


- 5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.**
- 5.b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.
- 5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- 5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
- 5.e. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices. MSDS forms are available from your welding distributor or from the manufacturer.
- 5.f. Also see item 1.b.





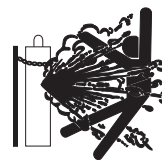
## WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION.



- 6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.
- 6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.
- 6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- 6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).
- 6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.
- 6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- 6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.
- 6.h. Also see item 1.c.
- 6.i. Read and follow NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, Ma 022690-9101.
- 6.j. Do not use a welding power source for pipe thawing.



## CYLINDER MAY EXPLODE IF DAMAGED.



- 7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- 7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- 7.c. Cylinders should be located:
  - Away from areas where they may be struck or subjected to physical damage.
  - A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- 7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.
- 7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- 7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.
- 7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association 1235 Jefferson Davis Highway, Arlington, VA 22202.



## FOR ELECTRICALLY POWERED EQUIPMENT.



- 8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.
- 8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.
- 8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

**Refer to**  
**<http://www.lincolnelectric.com/safety>**  
**for additional safety information.**



**Welding Safety  
Interactive Web Guide  
for mobile devices**

Get the free mobile app at  
<http://gettag.mobi>

As a rule of thumb, for many mild steel electrode, if the air is visibly clear and you are comfortable, then the ventilation is generally adequate for your work. The most accurate way to determine if the worker exposure does not exceed the applicable exposure limit for compounds in the fumes and gases is to have an industrial hygienist take and analyze a sample of the air you are breathing. This is particularly important if you are welding with stainless, hardfacing or Special Ventilation products. All Lincoln MSDS have a maximum fume guideline number. If exposure to total fume is kept below that number, exposure to all fume from the electrode (not coatings or plating on the work) will be below the TLV.

There are steps that you can take to identify hazardous substances in your welding environment. Read the product label and material safety data sheet for the electrode posted in the work place or in the electrode or flux container to see what fumes can be reasonably expected from use of the product and to determine if special ventilation is needed. Secondly, know what the base metal is and determine if there is any paint, plating, or coating that could expose you to toxic fumes and/or gases. Remove it from the metal being welded, if possible. If you start to feel uncomfortable, dizzy or nauseous, there is a possibility that you are being overexposed to fumes and gases, or suffering from oxygen deficiency. Stop welding and get some fresh air immediately. Notify your supervisor and co-workers so the situation can be corrected and other workers can avoid the hazard. Be sure you are following these safe practices, the consumable labeling and MSDS to improve the ventilation in your area. Do not continue welding until the situation has been corrected.

NOTE: The MSDS for all Lincoln consumables is available on Lincoln's website: [www.lincolnelectric.com](http://www.lincolnelectric.com)

Before we turn to the methods available to control welding fume exposure, you should understand a few basic terms:

**Natural Ventilation** is the movement of air through the workplace caused by natural forces. Outside, this is usually the wind. Inside, this may be the flow of air through open windows and doors.

**Mechanical Ventilation** is the movement of air through the workplace caused by an electrical device such as a portable fan or permanently mounted fan in the ceiling or wall.

**Source Extraction** (Local Exhaust) is a mechanical device used to capture welding fume at or near the arc and filter contaminants out of the air.

The ventilation or exhaust needed for your application depends upon many factors such as:

- Workspace volume
- Workspace configuration
- Number of welders
- Welding process and current
- Consumables used (mild steel, hardfacing, stainless, etc.)
- Allowable levels (TLV, PEL, etc.)
- Material welded (including paint or plating)
- Natural airflow

Your work area has adequate ventilation when there is enough ventilation and/or exhaust to control worker exposure to hazardous materials in the welding fumes and gases so the applicable limits for those materials is not exceeded. See chart of TLV and PEL for Typical Electrode Ingredients, the OSHA PEL (Permissible Exposure Limit), and the recommended guideline, the ACGIH TLV (Threshold Limit Value), for many compounds found in welding fume.

## Ventilation

There are many methods which can be selected by the user to provide adequate ventilation for the specific application. The following section provides general information which may be helpful in evaluating what type of ventilation equipment may be suitable for your application. When ventilation equipment is installed, you should confirm worker exposure is controlled within applicable OSHA PEL and/or ACGIH TLV. According to OSHA regulations, when welding and cutting (mild steels), natural ventilation is usually considered sufficient to meet requirements, provided that:

1. The room or welding area contains at least 10,000 cubic feet (about 22' x 22' x 22') for each welder.
2. The ceiling height is not less than 16 feet.
3. Cross ventilation is not blocked by partitions, equipment, or other structural barriers.
4. Welding is not done in a confined space.

Spaces that do not meet these requirements should be equipped with mechanical ventilating equipment that exhausts at least 2000 CFM of air for each welder, except where local exhaust hoods or booths, or air-line respirators are used.

## Important Safety Note:

**When welding with electrodes which require special ventilation such as stainless or hardfacing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce hazardous fumes, keep exposure as low as possible and below exposure limit values (PEL and TLV) for materials in the fume using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, for example outdoors, a respirator may be required if exposure cannot be controlled to the PEL or TLV. (See MSDS and chart of TLV and PEL for Typical Electrode Ingredients.) Additional precautions are also required when welding on galvanized steel.**

**BIBLIOGRAPHY AND SUGGESTED READING**

ANSI Z87.1, Practice for Occupational and Educational Eye and Face Protection, American National Standards Institute, 11 West 42nd Street, New York, NY 10036.

Arc Welding and Your Health: A Handbook of Health Information for Welding. Published by The American Industrial Hygiene Association, 2700 Prosperity Avenue, Suite 250, Fairfax, VA 22031-4319.

NFPA Standard 51B, Cutting and Welding Processes, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9146, Quincy, MA 02269-9959.

OSHA General Industry Standard 29 CFR 1910 Subpart Q. OSHA Hazard Communication Standard 29 CFR 1910.1200. Available from the Occupational Safety and Health Administration at <http://www.osha.org> or contact your local OSHA office.

The following publications are published by The American Welding Society, P.O. Box 351040, Miami, Florida 33135. AWS publications may be purchased from the American Welding society at <http://www.aws.org> or by contacting the AWS at 800-443-9353.

ANSI, Standard Z49.1, Safety in Welding, Cutting and Allied Processes. Z49.1 is now available for download at no charge at <http://www.lincolnelectric.com/community/safety/> or at the AWS website <http://www.aws.org>.

AWS F1.1, Method for Sampling Airborne Particulates Generated by Welding and Allied Processes.

AWS F1.2, Laboratory Method for Measuring Fume Generation Rates and Total Fume Emission of Welding and Allied Processes.

AWS F1.3, Evaluating Contaminants in the Welding Environment: A Strategic Sampling Guide.

AWS F1.5, Methods for Sampling and Analyzing Gases from Welding and Allied Processes.

AWS F3.2, Ventilation Guide for Welding Fume Control

AWS F4.1, Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances.

AWS SHF, Safety and Health Facts Sheets. Available free of charge from the AWS website at <http://www.aws.org>.

**LISTED BELOW ARE SOME TYPICAL INGREDIENTS IN WELDING ELECTRODES AND THEIR TLV (ACGIH) GUIDELINES AND PEL (OSHA) EXPOSURE LIMITS**

INGREDIENTS	CAS No.	TLV mg/m <sup>3</sup>	PEL mg/m <sup>3</sup>
Aluminum and/or aluminum alloys (as Al)*****	7429-90-5	1.0	15
Aluminum oxide and/or Bauxite*****	1344-28-1	1.0	5**
Barium compounds (as Ba)*****	513-77-9	0.5	0.5
Chromium and chromium alloys or compounds (as Cr)*****	7440-47-3	0.5(b)	0.5(b)
Hexavalent Chromium (Cr VI)	18540-29-9	0.05(b)	.005(b)
Copper Fume	7440-50-8	0.2	0.1
Cobalt Compounds	7440-48-4	0.02	0.1
Fluorides (as F)	7789-75-5	2.5	2.5
Iron	7439-89-6	10*	10*
Limestone and/or calcium carbonate	1317-65-3	10*	15
Lithium compounds (as Li)	554-13-2	15	10*
Magnesite	1309-48-4	10	15
Magnesium and/or magnesium alloys and compounds (as Mg)	7439-95-4	10*	10*
Manganese and/or manganese alloys and compounds (as Mn)*****	7439-96-5	0.02	5.0(c)
Mineral silicates	1332-58-7	5**	5**
Molybdenum alloys (as Mo)	7439-98-7	10	10
Nickel*****	7440-02-0	0.1	1
Silicates and other binders	1344-09-8	10*	10*
Silicon and/or silicon alloys and compounds (as Si)	7440-21-3	10*	10*
Strontium compounds (as Sr)	1633-05-2	10*	10*
Zirconium alloys and compounds (as Zr)	12004-83-0	5	5

**Supplemental Information:**

(\*) Not listed. Nuisance value maximum is 10 milligrams per cubic meter. PEL value for iron oxide is 10 milligrams per cubic meter. TLV value for iron oxide is 5 milligrams per cubic meter.

(\*\*) As respirable dust.

(\*\*\*\*) Subject to the reporting requirements of Sections 311, 312, and 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40CFR 370 and 372.

(b) The PEL for chromium (VI) is .005 milligrams per cubic meter as an 8 hour time weighted average. The TLV for water-soluble chromium (VI) is 0.05 milligrams per cubic meter. The TLV for insoluble chromium (VI) is 0.01 milligrams per cubic meter.

(c) Values are for manganese fume. STEL (Short Term Exposure Limit) is 3.0 milligrams per cubic meter. OSHA PEL is a ceiling value.

(\*\*\*\*) The TLV for soluble barium compounds is 0.5 mg/m<sup>3</sup>.

TLV and PEL values are as of October 2013. Always check Safety Data Sheet (SDS) with product or on the Lincoln Electric website at <http://www.lincolnelectric.com>

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<b>Parts .....</b>	<b>parts.lincolnelectric.com</b>

Content/details may be changed or updated without notice. For most current Instruction Manuals or Parts Page, go to [parts.lincolnelectric.com](http://parts.lincolnelectric.com).

## TECHNICAL SPECIFICATIONS - DOWNFLEX 200/400

DIMENSIONS L x W x H			
Downdraft Table		54.3 x 39.4 x 36.2 in. (1380 x 1005 x 920 mm)	
Downdraft Table incl. Backdraft Kit and Side Panels		54.3 x 39.4 x 60.8 in. (1380 x 1005 x 1543 mm)	
HEIGHT ADJUSTMENT			
36 - 38 in. / 920 - 970 mm (in case of wheel kit: fixed working height 37.4 in. / 950 mm)			
WEIGHT (Without Backdraft Kit, Side Panels And Other Options)			
DownFlex 200-M		540 lbs. (245 kg)	
DownFlex 400-MS/A		562 lbs. (255 kg)	
MAXIMUM LOAD			
440 lbs. (200 kg) (In Case Of Wheel Kit: 330 lbs. (150kg))			
CONNECTION VOLTAGE			
USA - 208-240V/480V/3ph/60Hz		CANADA - 600V/3ph/60Hz	
DEFAULT SETTING USA			
480V			
POWER CONSUMPTION			
3 kw (4HP)			
MAINS CORD			
10 ft. / 3 m (3.3 ft. / 1 m internal, 6.6 ft. / 2 m external) - without plug			
PROTECTION CLASS			
NEMA 1 (control box only)			
SOUND LEVEL			
Without Options		78 db(A)	
With Silencer		74 db(A)	
With Silencer And HEPA Kit		71 db(A)	
MAIN FILTER SURFACE AREA			
2 x 280 ft² (2 x 26 m²)			
FILTER CLASS ACCORDING TO DIN EN 60335-2-69			
M			
AMBIENT CONDITIONS			
Min. Operating Temp	Nom. Operating Temp	Max. Operating Temp	Max. Relative Humidity
41°F (5°C)	68°F (20°C)	104°F (40°C)	80%
DownFlex 400-MS/A only:			
Compressed Air Connection		3/8" (female)	
Compressed Air Pressure		72 - 115 psi (5 - 8 bar)	
Required Compressed Air Quality		dry and oil-free	

## GENERAL DESCRIPTION

The downdraft table is a workbench with an integrated extraction fan and filtration system that is used for welding, grinding and plasma cutting applications. Depending on the specific application, the use of certain accessories is required and/or recommended. See **Accessories** section of this manual.

The downdraft table features a work grid, a three-stage prefiltration system for optimum spark arresting and two oval main filter cartridges. Both pre and main filters have dust drawers underneath. The working height of the downdraft table is adjustable.

## INTENDED USE

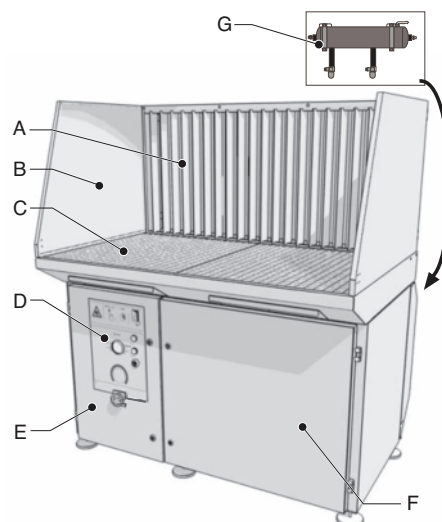
The product has been designed as a workbench with integrated extraction and filtration facility for welding and grinding purposes, provided the appropriate options have been installed (**See Accessories Section** of this manual). Using the product for other purposes is considered contrary to its intended use. The manufacturer accepts no liability for any damage or injury resulting from such use. The product has been built in accordance with state-of-the-art standards and recognized safety regulations. Only use this product when in technically perfect condition in accordance with its intended use and the instructions explained in the user manual.

## COMPONENTS

The downdraft table consists of the following main components See Figures A.1 and A.2:

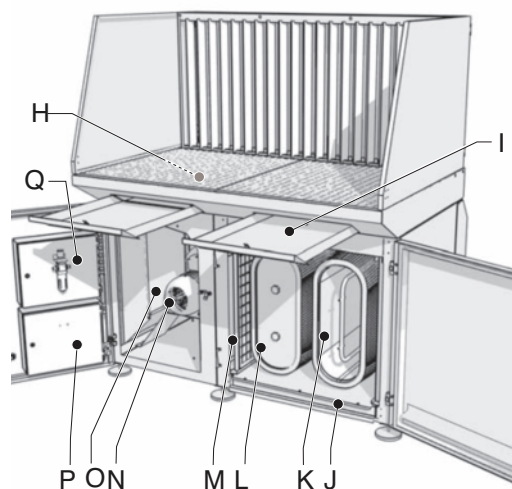
- A. Backdraft kit
- B. Side panels (left + right)
- C. Work grid (two-piece)
- D. Control panel
- E. Left door (controls/fan)
- F. Right door (filter compartment)
- G. Compressed air tank (DownFlex 400-MS/A only)
- H. Prefilters (1st stage; located under work grid)
- I. Dust drawers (prefiltration)
- J. Dust drawer (main filter cartridges)

FIGURE A.1 – COMPONENTS



- K. Filter cleaning mechanism (DownFlex 400-MS/A only)
- L. Filter cartridges (2)
- M. Prefilters (2nd stage)
- N. Fan
- O. Outlet grid
- P. Electrics high voltage
- Q. Electrics low voltage

FIGURE A.2 – COMPONENTS





## INSTALLATION

### TOOLS AND REQUIREMENTS

The following tools and requirements are needed to install the product:

- Spanner M6 and M8
- Hexagon wrench 10 and 13 (1/2 in.)

### UNPACKING

Check that the product is complete. The package should contain:

- Downdraft table
- Work grid (two-piece)
- Cover strip with 8 bolts M6 (cover strip not included when backdraft kit and side panels are standard equipment; bolts packed with backdraft kit)
- Square key 8 mm (to lock/unlock doors)
- Square key 6 mm (to lock/unlock dust drawers and doors of electrics)

If parts are missing or damaged, contact your supplier.

### OPTIONS

Mount optional side panels, back panel, backdraft kit, and/or plasma cutting work grid, if any. Otherwise, refer to **Work Grid** for mounting of work grid.

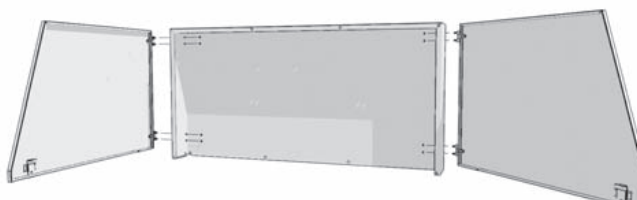
### SIDE PANELS

Side panels are to be mounted to the back panel or backdraft kit. See Figure A.3.

To mount the side panels, proceed as follows.

1. Unscrew the bolts on the loose side of the hinges and remove the washers; keep the bolts and washers.
2. Put the pins through the holes on the sides of the back panel or backdraft panel.
3. Place the washers and bolts over the pins.

**FIGURE A.3 – SIDE PANELS**



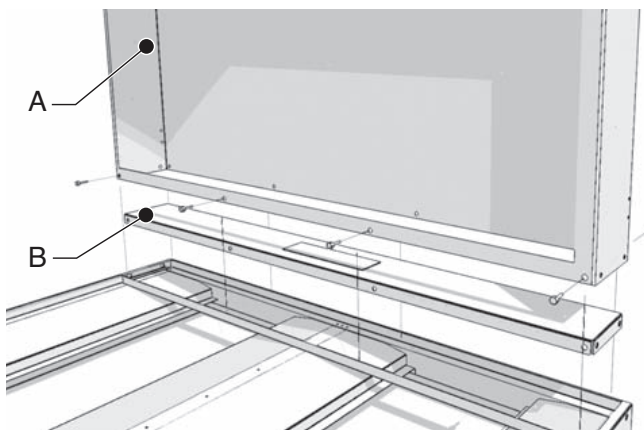
4. Tighten the bolts.

### BACK PANEL

To mount the back panel, proceed as follows. See Figure A.4.

1. Unscrew the cover strip.
2. Place the back panel (A). See Figure A.4.
3. Place the cover strip (B) inside the back panel. See Figure A.4.
4. Fasten the back panel and cover strip using the 8 bolts.

**FIGURE A.4 – BACK PANEL**



### BACKDRAFT KIT

The backdraft kit consists of:

- Backdraft panel
- 2 Narrowing plates

**NOTE:** When the downdraft table will be used for grinding only, it is not necessary to mount the narrowing plates. For welding and plasma cutting, however, the narrowing plates are required.

To mount the backdraft kit, proceed as follows.

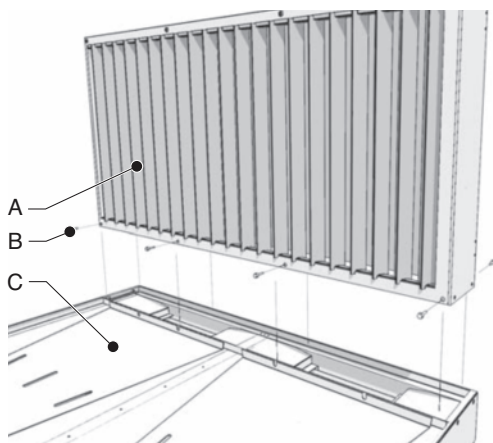
1. Unscrew the cover strip. (Keep the 8 bolts)

**NOTE:** Downdraft table contains no cover strip when backdraft kit and side panels are standard equipment; bolts packed with backdraft kit.

2. Place the narrowing plates (C). **See Figure A.5.**
3. Place the backdraft panel (A). **See Figure A.5.**
4. Fasten the narrowing plates and the backdraft panel using the 8 bolts (B). **See Figure A.5.**

The supplied cover strip is not used.

FIGURE A.5 – BACKDRAFT KIT



### PLASMA CUTTING WORK GRID

The plasma cutting work grid consists of:

- 2 Grid frames 28.9 x 26.3 x 2.5 in.  
(735 x 669 x 64 mm)
- 2 x 13 Metal bars 28.54 x 2.36 x 0.16 in.  
(725 x 60 x 4 mm)
- 2 Additional perforated steel spark arresters

To mount the plasma cutting work grid, proceed as follows.

1. Place the perforated steel spark arresters over the prefilters (A). The edgeless sides should be directed to the back. See Figure A.6.

### ⚠ CAUTION

**Do not remove the standard prefilters.**

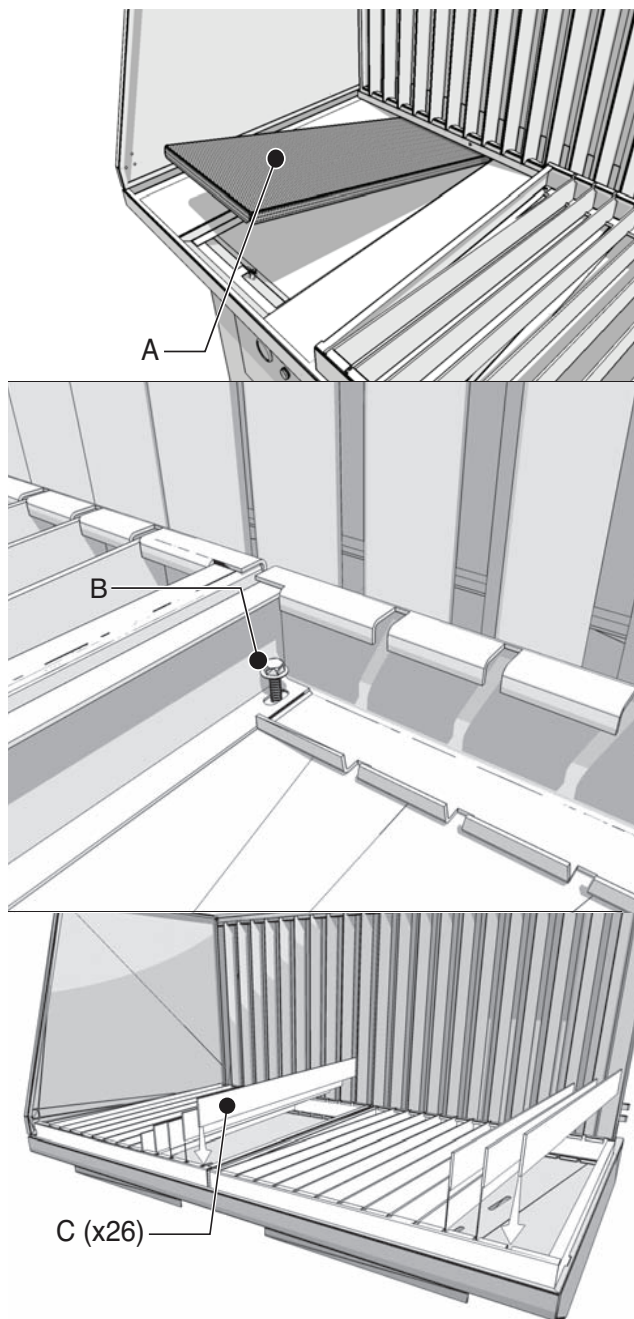
2. Remove the ground bracket at the position of the work grid. Keep the two bolts.
3. Place the frames into position.
4. Fasten the frames using the 2 bolts (B). See Figure A.6.

**NOTE:** It is necessary to install the bolts to ground the work grids.

5. Place the bars (C). See Figure A.6.

**NOTE:** The supplied standard work grid and the ground bracket are not used.

FIGURE A.6 – PLASMA CUTTING WORK GRID

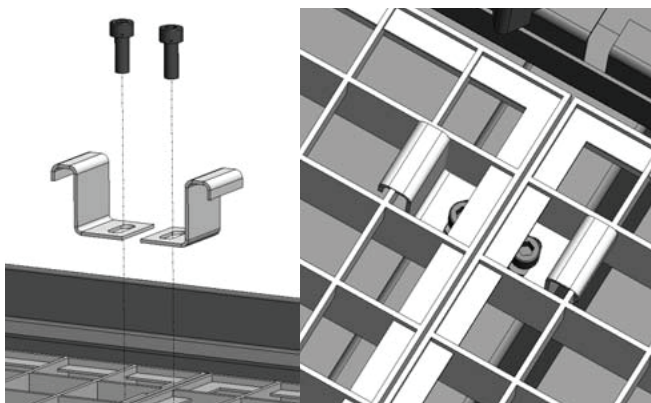


## WORK GRID

To mount the standard work grid, proceed as follows. See Figure A.7.

1. Loosen the ground bracket.
2. Place the work grids into position.
3. Place the ground bracket over both work grids.
4. Tighten the ground bracket.

**FIGURE A.7 – WORK GRID**



**NOTE:** It is necessary to install the bracket to ground the work grids.

## INSTALLATION OF REMAINING OPTIONS

### HEPA KIT

#### ⚠ ATTENTION



Handle HEPA box and filter cartridge with care during unpacking and mounting to avoid damage.

The HEPA kit consists of:

- HEPA box with filter
- 2 Adjustable feet
- 4 Spare bolts M6
- Draft strip

To mount the HEPA kit, proceed as follows.

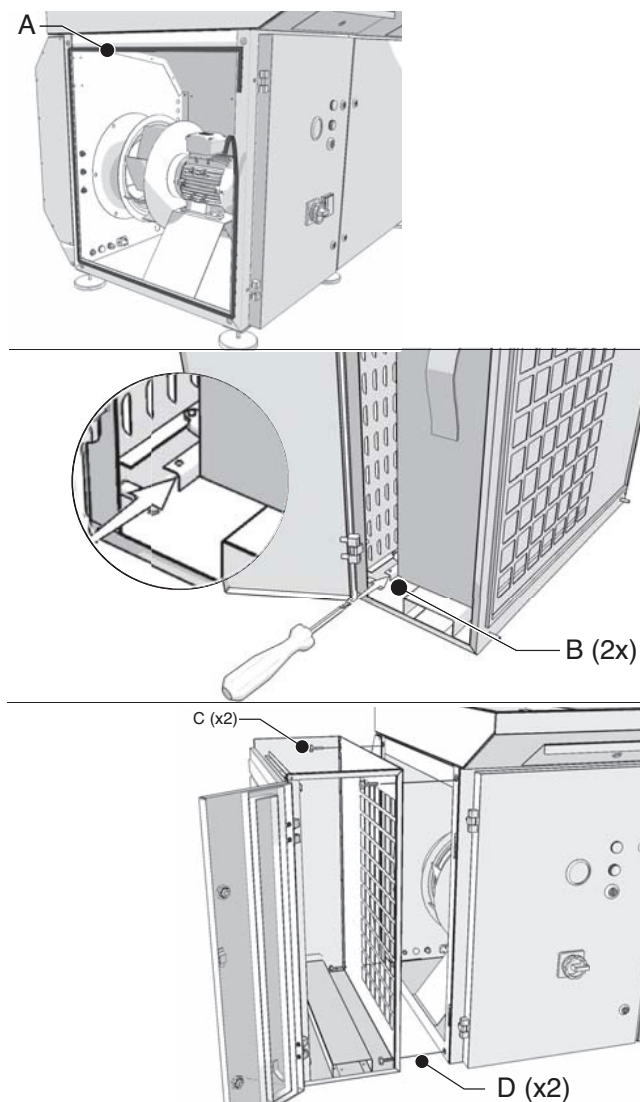
1. Unscrew and remove the outlet panel from the downdraft table. Keep the 4 screws **See Figure A.8**, top image.
2. Apply the draft strip to the downdraft table (A). **See Figure A.8.**

3. Unlock the HEPA filter cartridge by pressing a screwdriver or other tool at the position of the strips (B) on the top and bottom of unit. **See Figure A.8.**
4. Take out the filter cartridge.
5. Mount the adjustable feet underneath the HEPA kit.

**NOTE:** Remove the outlet panel from the HEPA kit, as well as the outlet grid inside the downdraft table, to facilitate mounting. Don't forget to replace them when mounting is complete.

6. Place bolts halfway through the 2 upper holes (C) at the outlet of the downdraft table. **See Figure A.8.**
  7. Hang the HEPA box on the bolts.
  8. Place bolts through the 2 lower holes (D) in the HEPA box. **See Figure A.8.**
  9. Fasten the HEPA box by tightening the 4 bolts (C+D). **See Figure A.8.**
  10. Replace the filter cartridge.
  11. Lock the filter cartridge by pulling the two straps tightly. This is indicated by a "click" sound.
- NOTE:** If a Silencer/Outlet duct has to be installed as well, the outlet panel of the HEPA kit does not need to be mounted.
12. Adjust the feet when the downdraft table is placed in place in its final position.
- NOTE:** The outlet panel of the downdraft table is not used.

FIGURE A.8 – HEPA KIT



## SILENCER/OUTLET DUCT

The Silencer/Outlet duct consists of:

- Shaft
- Draft strip

The Silencer/outlet duct can be connected to the HEPA kit or directly to the downdraft table.

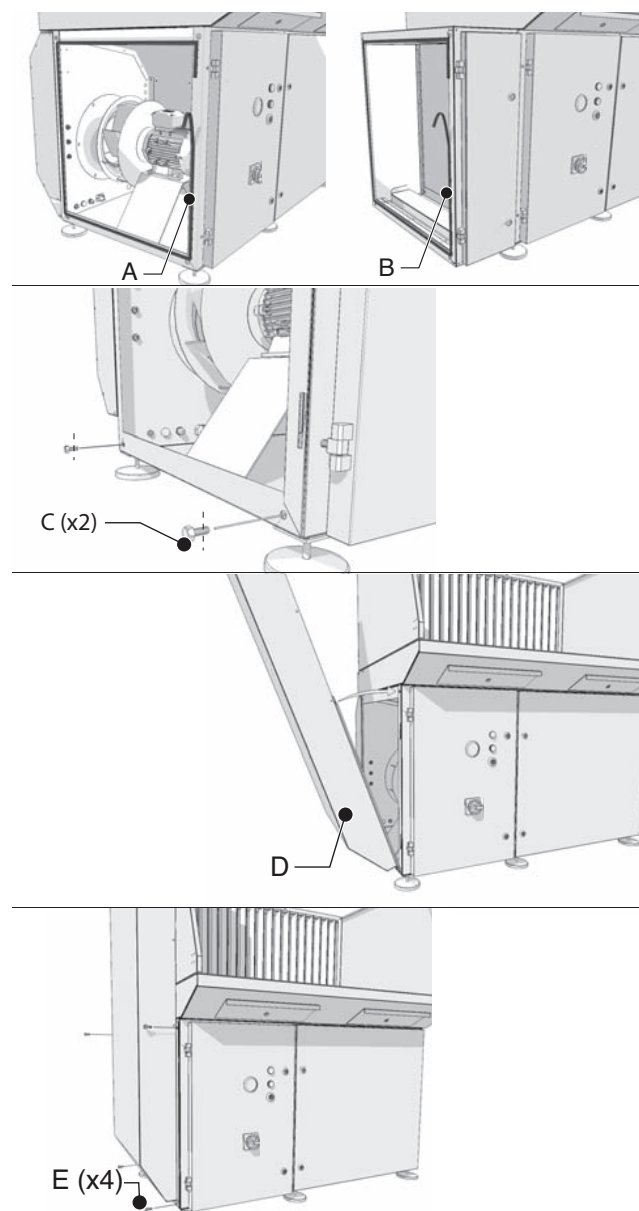
To mount the silencer/outlet duct, proceed as follows. See Figure A.9.

1. If necessary: unscrew the outlet panel of the downdraft table or the outlet panel of the HEPA kit. Keep the 4 bolts.
2. Apply the draft strip to the downdraft table (A) or HEPA kit (B). See Figure A.9.

3. Place bolts halfway through the 2 lower holes at the outlet of the downdraft table or HEPA box (C). See Figure A.9.
4. Place the silencer/outlet duct over the bolts (D). See Figure A.9.
5. Put the silencer/outlet duct in an upright position and place 2 bolts in the 2 upper holes.
6. Fasten the silencer/outlet duct by tightening the 4 bolts (E). See Figure A.9.

**NOTE:** The outlet panel of the downdraft table is not used.

FIGURE A.9 – SILENCER / OUTLET DUCT





## WORKING LIGHT

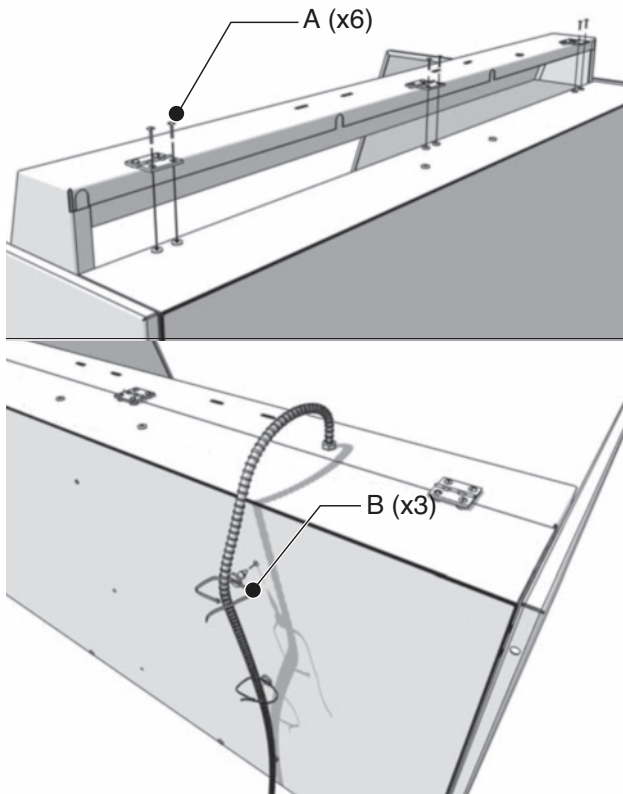
The working light consists of:

- Lighting fixture with 7.5 ft (2.3 m) of cable and plug
- 6 Bolts M6
- 3 Tie-wraps

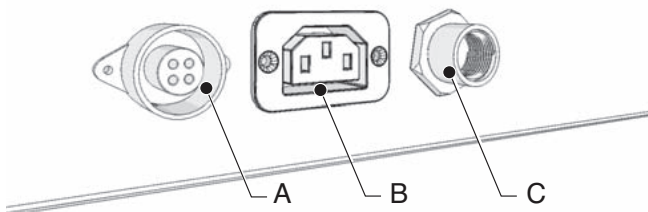
To mount the working light, proceed as follows.

1. Mount the lighting fixture using the 6 bolts (A). See Figure A.10.
2. Route the cable down the back side of the downdraft table.
3. Attach the cable to the back panel or backdraft panel using the 3 tie-wraps (B). See Figure A.10.
4. Connect the cable. See Figure A.11, item B.

**FIGURE A.10 – WORKING LIGHT**



**FIGURE A.11 – CONNECTIONS**



## MOVEMENT SENSOR

(DownFlex 400-MS/A only)

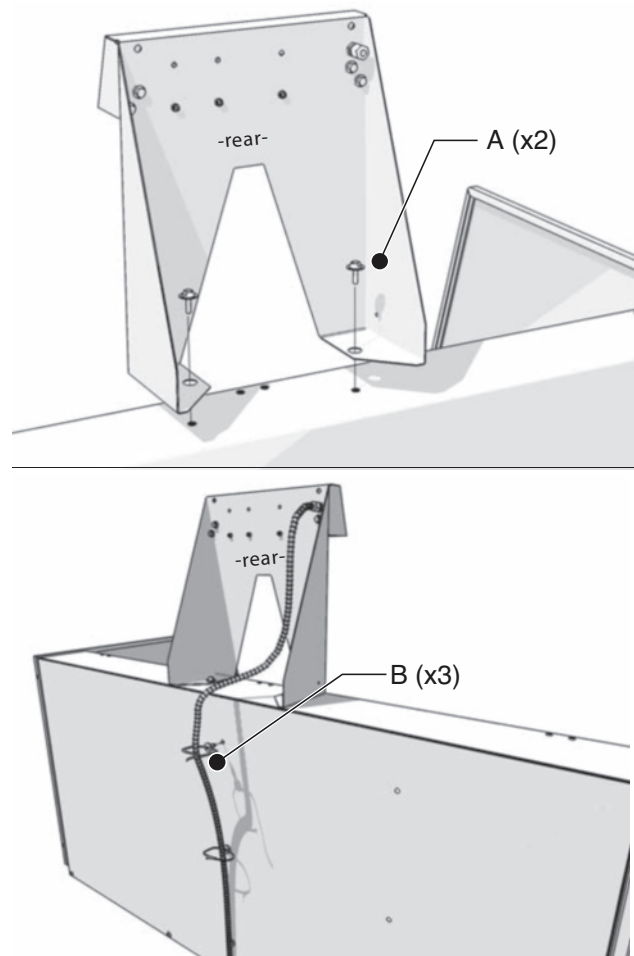
The movement sensor consists of:

- Automatic start/stop device with 7.5 ft (2.3 m) of cable and plug
- 2 Bolts M6
- 3 Tie-wraps

To mount the movement sensor, proceed as follows.

1. Mount the movement sensor on top of the back panel or backdraft panel using the 2 bolts (A). See Figure A.12.
2. Lead the cable down the back side of the downdraft table.
3. Attach the cable to the back panel or backdraft panel using the 3 tie-wraps (B). See Figure A.12.
4. Connect the cable. See Figure A.11, item A.

**FIGURE A.12 – MOVEMENT SENSOR**



## WELDING CABLE SENSOR

(DownFlex 400-MS/A only)

The welding cable sensor consists of:

- Clamp with 7.5 ft (2.3 m) of cable and plug.

To mount the welding cable sensor, proceed as follows.

1. Connect the cable. **See Figure A.11**, item A.

## BENCH VICE MOUNTING BRACKET

**The bench vice mounting bracket can be mounted on the standard work grid only.**

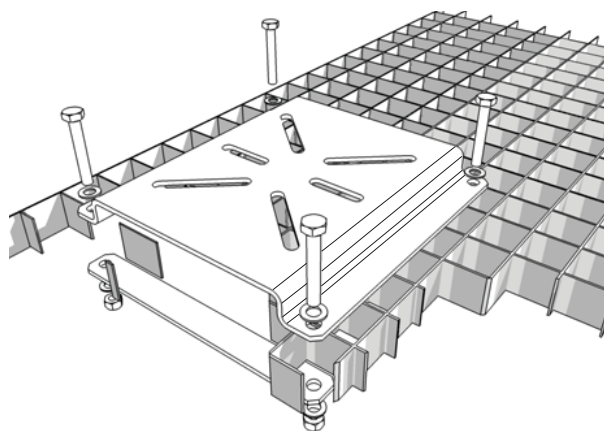
The bench vice mounting bracket consists of:

- Mounting bracket
- 2 Strips
- 4 Bolts M6
- 4 Nuts M6
- 8 Washers

To mount the bench vice mounting bracket, proceed as follows.

1. Position the mounting bracket on the grid.
2. Place the strips underneath the grid and fasten them using the bolts, nuts and washers. See Figure A.13.
3. Place the strips underneath the grid and fasten them using (from bottom to top): nut - washer - strip - grid - mounting bracket - washer - bolt.

**FIGURE A.13 – BENCH VICE MOUNTING BRACKET**



## WHEEL KIT

The wheel kit consists of:

- 2 Swivel casters with brakes.
- 3 Swivel casters without brakes.

To mount the wheel kit, proceed as follows.

1. Carefully lift the downdraft table using a fork-lift truck or pallet jack.
2. Unscrew the 5 adjustable feet.
3. Mount the swivel casters; mount the ones with brakes at the left and right front corners.

**NOTE:** Drive in the screw thread of the swivel casters as deep as possible.

**NOTE:** By the use of the wheel set, the working height of the downdraft table is fixed to 37.4 in. (950 mm).

## COMPRESSED AIR CONNECTION

(DownFlex 400-MS/A only)

The downdraft table cleaning mechanism functions on compressed air with a recommended working pressure of 72-115 psi (5-8 bar). Always make sure that the working pressure is between these values (preferably at 72 psi/5 bar). If required, mount a pressure reducing valve to prevent overpressure. If the pressure is too high, the safety valve of the system will be opened, thus decreasing the pressure until the system pressure has reached an appropriate level.

1. Connect the downdraft table to compressed air. **See Figure A.11**, item C. Connection  $\frac{3}{8}$  in.

## POSITIONING

The downdraft table can be positioned using:

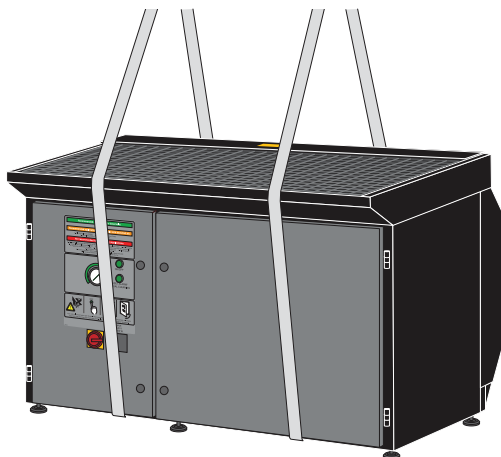
- A fork-lift truck (preferred way); or
- A pallet jack (downdraft table has to be tilted); or
- Cargo lashings lifted by a fork-lift truck. See Figure A.14.



**⚠ CAUTION**

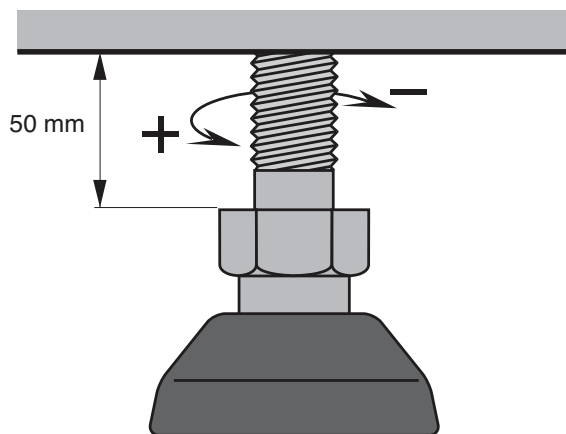
Do not position the product where it is exposed to vibrations or heat radiation from heat sources. Observe the earlier described ambient conditions.

FIGURE A.14 – CARGO LASHINGS



- Position the downdraft table against the wall.
- If necessary, use the adjusting feet to level the downdraft table and to adjust it to the desired height (min. 36 in. - max. 38 in. 920-970 mm). See Figure A.15.

FIGURE A.15 – ADJUSTABLE FEET

**⚠ WARNING**

**FALLING  
EQUIPMENT** can  
cause injury.

- Lift only with equipment of adequate lifting capacity.
- Be sure machine is stable when lifting.
- Do not lift this machine using lift bail if it is equipped with a heavy accessory such as trailer or gas cylinder.
- Do not lift machine if lift bail is damaged.
- Do not operate machine while suspended from lift bail.

**ELECTRICAL CONNECTION****⚠ CAUTION**

Make sure that the system is suitable for connection to the local input power. Information about the connection voltage and frequency can be found on the identification plate.

The input power must be connected in conformance with the local codes and regulations and can only be installed by well qualified and authorized technicians.

**If necessary: change motor from 480V to 208/240V**

Default setting of the motor is 480V. Depending on the local input power voltage, the setting could be changed to 208/240V. This concerns both the motor and the transformer.

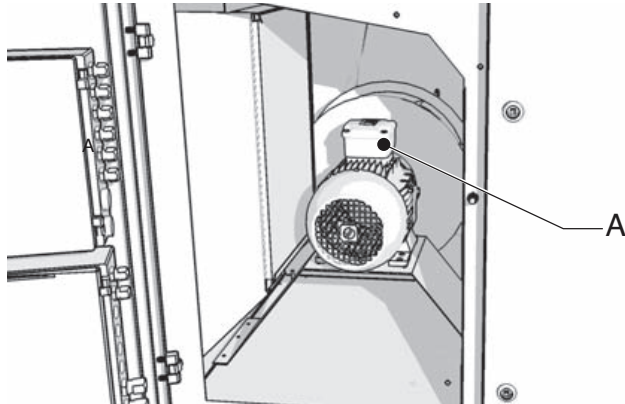
**⚠ WARNING**

Make sure the downdraft table is disconnected from input power.

To change the motor from 480V to 208/240V, proceed as follows.

1. Open left door.
2. Loosen 4 screws from motor connection block (A) and remove cover. See Figure A.16.
3. Disconnect the 3 phase wires from the motor connection block.

**FIGURE A.16 – MOTOR CONNECTION BLOCK**



**Cable jumpers and wiring diagram necessary to change the motor setting, are supplied in a plastic folder which can be found on the upper right side of the downdraft table.**

- Reconfigure the wiring from Y to YY in accordance with the wiring diagram.
- Replace cover of motor connection block.

**To reconfigure the transformer, proceed as follows. See Figure A.17.**

1. Open door to access high voltage electronics.  
**See Figure A.2, item Q.**

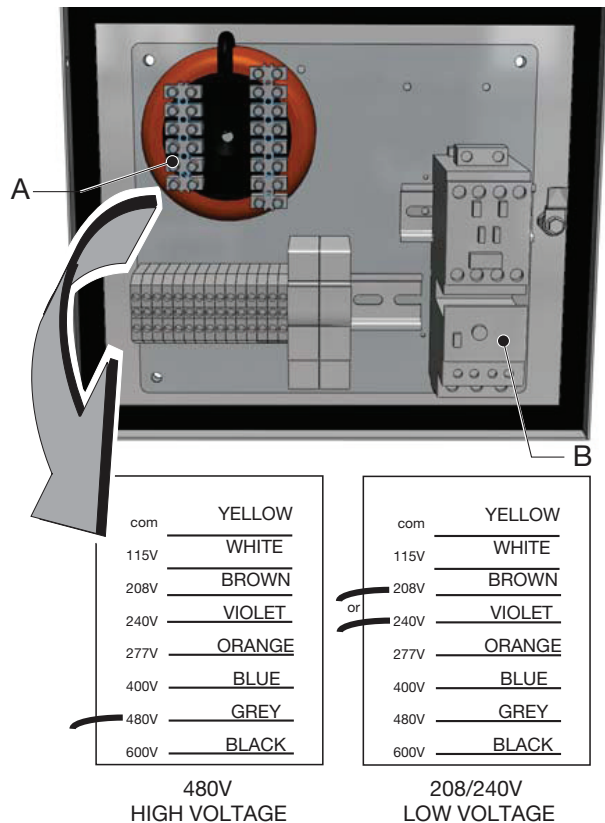
**Transformer (A):**

2. Disconnect the wire from the primary 480V tap (grey) and reconnect the primary 208V tap (brown) or 240V tap (violet).

**Overload relay (B):**

3. Adjust overload relay to 10 Amps.
4. Close and lock all doors.

**FIGURE A.17 – CHANGE OF TRANSFORMER**



**CONNECTION TO THE INPUT POWER**

To connect the downdraft table to the input power, proceed as follows.

1. Mount a fuse in the local fuse box to which the downdraft table will be connected. Check the electrical diagram for the right type of fuse. Refer to the following table:

**⚠ WARNING**



**Make sure the downdraft table is disconnected from input power.**

	USA		Canada
Electrical Diagram	208-240V Figure #	480V Figure #	600V Figure #
DownFlex 200-M	Figure F.1	Figure F.2	Figure F.3
DownFlex 400-MS/A	Figure F.4	Figure F.5	Figure F.6

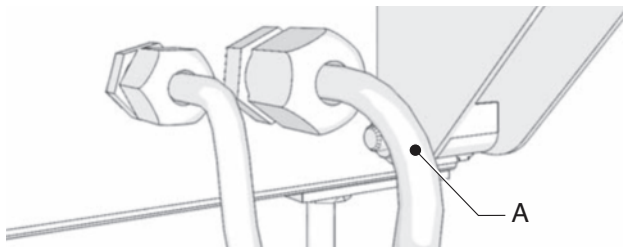
**! WARNING**

Be sure to mount the right fuse type. Plugs/connections to be installed in accordance with the National Electrical Code (NEC) and local requirements.

The downdraft table can be connected to input power by:

- 3ph plug (grounded); or
  - Directly to the power supply
1. Connect the main cord (A) to the input power. See Figure A.18.

**FIGURE A.18 – ELECTRIC CONNECTION**

**! WARNING**

Do not open the door within 20 seconds after switching off the fan. Keep your hands away from the fan wheel.

**DIRECTION OF ROTATION**

Check the direction of rotation of the fan.

1. Turn on the main switch.
2. Push the ON button to switch on the fan.
3. Push the OFF button to switch off the fan.
4. Wait 20 seconds.
5. Open the left door.

The motor contains a sticker indicating the correct direction of rotation.

1. Check the direction of rotation during the slow-down period of the fan.
2. Turn off the main switch.
3. Disconnect the downdraft table from the input power.
4. If the fan is rotating in the wrong direction change the connection of the phases.

## GENERAL DESCRIPTION

The downdraft table is a workbench with an integrated extraction fan and filtration system that is used for welding, grinding and plasma cutting applications. Depending on the specific application, the use of certain accessories is required and/or recommended. See **Accessories** section of this manual.

The downdraft table features a work grid, a three-stage prefiltration system for optimum spark arresting and two oval main filter cartridges. Both pre and main filters have dust drawers underneath. The working height of the downdraft table is adjustable.

### DOWNFLEX 200-M

The main filter cartridges of the DownFlex 200-M are disposable. A Magnehelic gauge on the control panel indicates when the filter cartridges need to be replaced.

### DOWNFLEX 400-MS/A

The filter cleaning system inside the DownFlex 400-MS/A starts automatically each time the fan is switched off (offline cleaning) and also when the pressure drop reaches a certain maximum value during use (online cleaning). The filter cartridges are cleaned from the inside by compressed air pulses. An integrated buzzer indicates when the filter cartridges need to be replaced.

## OPERATION

The air containing welding fume, grinding dust or debris from other processes is extracted and filtered, after which the filtered air is recirculated back into the work environment.

The air is extracted through the work grid and the backdraft panel (See **Accessories** section of this manual) by the internal extraction fan. The air passes through a prefilter for optimum air distribution. This prefilter is the first spark arresting stage. Next, the air passes through a labyrinth spark trap before it reaches the vertical prefilters in the main filter housing. Finally, the air passes through the main filter cartridges. The air exits the downdraft table through the outlet on the left side.

## SAFETY PRECAUTIONS

### ⚠ WARNING



**FUMES AND GASES** can be dangerous

Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases.

When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.

The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV.

### ⚠ WARNING



Never use the downdraft table without prefilters, main filter cartridges and dust drawers.

### ⚠ WARNING



**Fire hazard!** Never use the product for:

- Filtering flammable, glowing or burning particles or solids or liquids.
- Filtering of aggressive fumes (such as hydrochloric acid) or sharp particles.
- Sucking cigarettes, cigars, oiled tissues, and other burning particles, objects, and acids.

**! WARNING**

Never use the product for:

- Oxy-fuel cutting.
  - Arc-air gouging.
  - Oil mist.
  - Paint mist.
  - Heavy oil mist in welding fume.
  - Extraction of hot gases (more than 45°C/113°F continuously).
  - Grinding aluminum and magnesium.
  - Flame spraying.
  - Extraction of cement, saw dust, wood dust etc.
  - Explosive environments or explosive substances/ gases.
- 

**! WARNING**

In case of welding and plasma cutting, the use of a backdraft kit is required.

---

- Inspect the product and check it for damage. Verify the functioning of the safety features.
- Check the working environment. Do not allow unauthorized persons to enter the working environment.
- Protect the product against water and humidity.
- Use common sense. Stay alert and keep your attention to your work. Do not use the product when you are under the influence of drugs, alcohol or medicine.
- Make sure the room is always sufficiently ventilated; this applies especially to confined spaces.
- Never install the product in front of entrances and exits which must be used for emergency services.
- Make sure that the workshop in the vicinity of the product, contains sufficient approved fire extinguishers.
- Maintenance should only be performed by authorized, qualified and trained persons (skilled) using appropriate work practices.
- Always wear face mask and gloves during filter exchange / cleaning.

**! WARNING**

Moving parts (fan) may cause injury. After switching off the fan, wait at least 20 seconds before opening the door(s) to carry out service, maintenance or repair jobs.

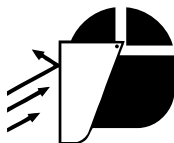
- Industrial vacuum cleaner used during service and maintenance should meet OSHA guidelines for Cr6 housekeeping.
  - Always use the downdraft table with prefilters, filter cartridges and dust drawers properly installed.
-

## FILTER REPLACEMENT

### FILTER CARTRIDGES AND PREFILTERS

If the filter cartridges and/or prefilters are damaged or saturated, they need to be replaced. To replace the filter cartridges or prefilters, proceed as follows:

#### WARNING



• Always wear face mask and gloves during filter replacement. Other appropriate work clothing may be required to protect workers.

1. Turn off the main switch and remove the input power.
2. Unpack the replacement filter cartridges and prefilters.
3. Save plastic bag. Wear mask and gloves.
4. Wear mask and gloves.

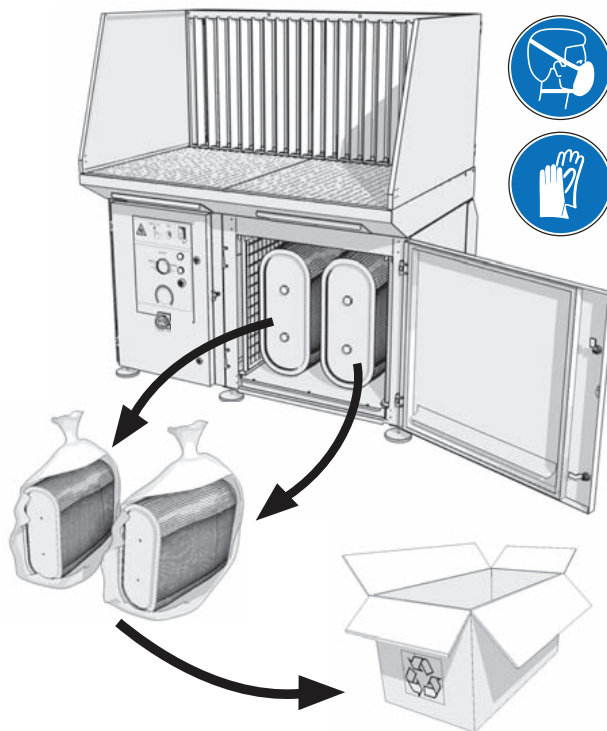
#### WARNING

Wait at least 60 seconds before opening the door to allow the dust in the filter compartment to settle.

**NOTE:** Turn square key to the left to unlock the door.

5. Remove the used filter cartridges and pack them in the plastic bags in which the new filters are supplied. See Figure B.1.
6. Seal the bags firmly with the supplied tie-wrap.
7. Remove the prefilters (both 1st and 2nd stage); **See Figure A.2**, items H and M.
8. Clean dust trays, work surfaces and prefilters by using an industrial vacuum cleaner (HEPA where required) and wet wiping techniques.
9. If prefilters (1st and/or 2nd stage) are saturated, replace.
10. Seal prefilter bag firmly with supplied tie-wrap.
11. Install new filter cartridges in unit.
12. Close the door and turn on main switch.
13. Dispose of filter cartridges and prefilters in accordance with federal, state and/or local regulations.

FIGURE B.1 – FILTER REPLACEMENT





## HEPA FILTER (OPTIONAL)

The HEPA filter is supplied in a plastic bag and comes with face mask and a pair of disposable gloves. It should be replaced at the same time as the main filter cartridges.

### **WARNING**

- **Always wear face mask and gloves during filter replacement. Other appropriate work clothing may be required to protect workers.**
- 

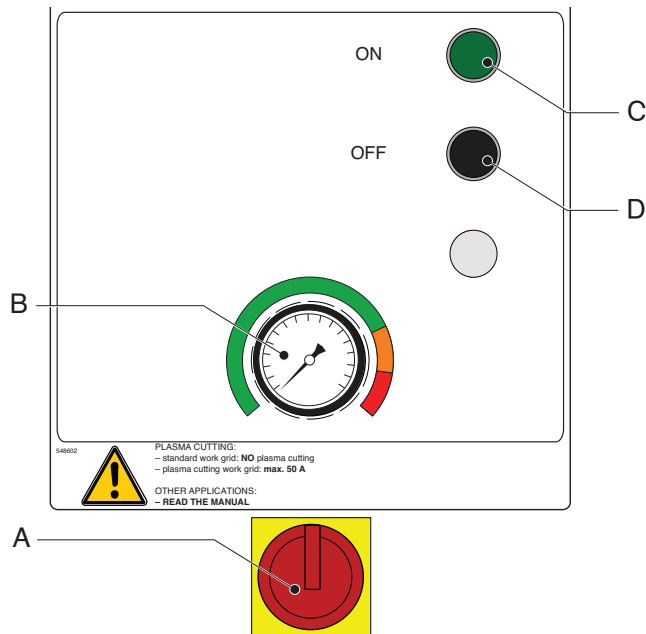
1. Turn off the main switch and remove the input power.
2. Open door of HEPA kit.
3. Unlock the HEPA filter cartridge (***See Figure A.8, item B***).
4. Remove the used filter cartridge and pack it in the plastic bag in which the new filter is supplied.
5. Clean filter housing, using a HEPA industrial vacuum cleaner and wet wiping techniques.
6. Install new HEPA filter cartridge.
7. Close the door.
8. Dispose of materials in accordance with federal, state and/or local regulations.

**DOWNFLEX 200-M (Only)****CONTROL PANEL**

The control panel is equipped with the following controls. (See Figure B.2):

- A. Main Switch
- B. Magnehelic Gauge
- C. ON Button
- D. OFF Button

**FIGURE B.2 – CONTROL PANEL**

**FILTER REPLACEMENT**

1. During use, regularly check the Magnehelic gauge (B). When the pressure reaches 0.25 psi (1700 Pa), the filter cartridges need to be replaced. See Figure B.2.
2. Refer to **Filter Replacement** for the filter replacement procedure.

**OPERATION**

1. Turn on the main switch (A). See Figure B.2.
2. Push the ON button (C) to switch on the fan. See Figure B.2.
3. Start welding/grinding.
4. After finishing welding/grinding, push the OFF button (D) to switch off the fan. See Figure B.2.
5. Turn switch (A) off to remove the main input power.

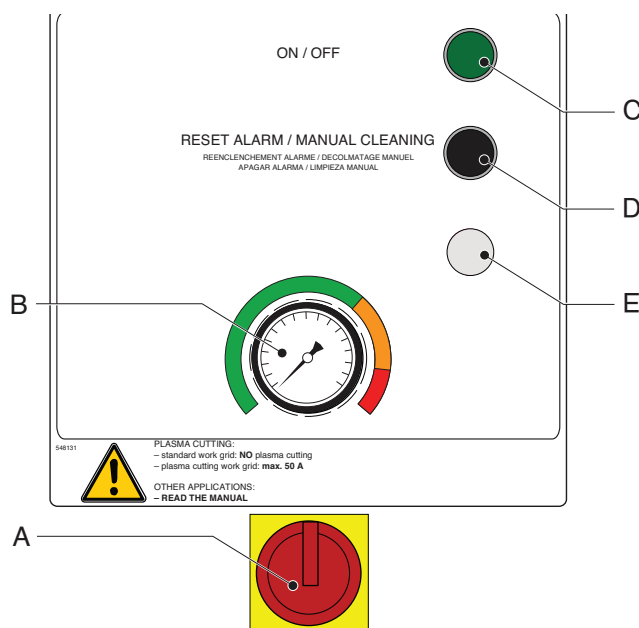
## DOWNFLEX 400-MS/A (Only)

### CONTROL PANEL

The control panel is equipped with the following controls. (See Figure B.3):

- A. Main Switch
- B. Magnehelic Gauge
- C. ON/OFF Button
- D. Button RESET ALARM/MANUAL CLEANING
- E. Buzzer

**FIGURE B.3 – CONTROL PANEL**



## OPERATION

1. Turn on the main switch (A). See Figure B.3.

Without movement sensor and welding cable sensor:	With movement sensor:	With welding cable sensor: (for welding only):
<ul style="list-style-type: none"> <li>• Push the ON/OFF button (C) to switch on the fan.</li> <li>• Start welding / grinding.</li> <li>• After finishing welding / grinding, push the ON / OFF button (C) to switch off the fan.</li> </ul>	<ul style="list-style-type: none"> <li>• Start welding / grinding. The fan will start and stop automatically.</li> </ul>	<ul style="list-style-type: none"> <li>• Apply the clamp of the welding cable sensor to the ground cable of the welding machine.</li> <li>• Start welding. The fan will start and stop automatically.</li> </ul>

### AUTOMATIC FILTER CLEANING

Each time the downdraft table is switched off, the filter cartridges are automatically cleaned by a full cleaning cycle. This procedure takes approximately 7 minutes, during which each filter cartridge is cleaned by max. 10 compressed air blasts.

**NOTE:** To secure optimum filter efficiency the filter cleaning system will not be activated during the first 20 hours of operation or within 20 hours after filter replacement.

### MANUAL FILTER CLEANING

If desired, the filter cleaning system can be activated manually (online cleaning only).

1. Push the ON/OFF button (C) to switch on the fan. See Figure B.3.
2. Press button RESET ALARM/MANUAL CLEANING (D) during 5 seconds to activate the filter cleaning system. See Figure B.3.

This procedure takes approximately 4 minutes, during which each filter cartridge is cleaned by 6 compressed air blasts.

**NOTE:** To secure optimum filter efficiency the filter cleaning system cannot be activated during the first 20 hours of operation or within 20 hours after filter replacement.

### BUZZER

The buzzer may emit two different interrupted sounds:

- 2 Seconds on - 2 seconds off: clogged filter
- 2 Seconds on - 5 seconds off: compressed air missing

When the pressure over the filter cartridges reaches 0.22 psi (1500 Pa) during use, the buzzer will emit an interrupted sound (2 seconds on - 2 seconds off). In this case proceed as follows.

1. Press button RESET ALARM/MANUAL CLEANING (D) to deactivate the buzzer. See Figure B.3.
2. Push the ON/OFF button (C) to switch off the fan. See Figure B.3.

After the fan has been switched off, the automatic filter cleaning procedure will be activated. See Automatic Filter Cleaning.

**NOTE:** Buzzer sound is suppressed during one hour enabling the user to finish his job. If necessary/desired, buzzer can be suppressed (repeatedly), provided that the downdraft table is switched off by ON/OFF button at the end of the day.

**NOTE:** When welding/grinding and cleaning is finished turn switch (A) off to remove the main input power.

## FILTER REPLACEMENT

When the filter cleaning system is unable to get the pressure below 0.22 psi (1500 Pa) after 5 attempts, the filter cartridges are probably saturated and need to be replaced. This is indicated by the buzzer emitting an interrupted sound (2 seconds on - 2 seconds off).

1. Press button RESET ALARM/MANUAL CLEANING (D) to deactivate the buzzer (E). See Figure B.3.
2. Push the ON/OFF button (C) to switch off the fan. See Figure B.3.
3. Wait 20 seconds for fan to stop rotating.
4. Refer to **Filter Replacement** for the filter replacement procedure.

## ACCESSORIES

The following products are accessories for the DownFlex tables:

### CAUTION

**Backdraft kit and side panels are standard equipment.**

#### A. Back Panel

The back panel consists of a sheet metal plate to be mounted on the downdraft table. The back panel functions as a deflector plate for grinding applications. It also prevents tools, metal and other parts from falling behind the downdraft table.

#### B. Backdraft Kit (required for all welding applications and recommended for grinding applications)

The backdraft kit consists of narrowing plates to be mounted underneath the work grid and a backdraft panel with vertical lamellas. The backdraft kit is required for all welding and plasma cutting applications and recommended for grinding applications. By using the backdraft kit, the downdraft extraction capacity is reduced to approx. 20%. The remaining 80% is extracted through the backdraft panel.

#### C. Side Panels

The side panels consist of hinged trapezium-shaped sheet metal plates and have to be used in combination with the backdraft kit or back panel. They are to be mounted on the sides of the downdraft table. Side panels improve the extraction effectiveness by reducing the influences of draft. They also prevent tools, metal and other parts from falling off the downdraft table. Side panels are hinged to accommodate large workpieces.

#### D. Plasma Cutting Work Grid (required for plasma cutting applications)

Specially constructed work grid suitable for plasma cutting, including additional perforated steel spark arresters. The plasma cutting work grid is required for plasma cutting applications (max. 50 A). The additional perforated steel spark arresters protect the prefilters already present.

### CAUTION

**Current of plasma cutting machine should NOT exceed 50 Amps.**

#### E. HEPA Kit

Consists of a filter housing with a HEPA filter to be mounted on the outlet of the downdraft table.

#### F. Silencer/Outlet Duct

Consists of a rectangular sheet metal shaft to be mounted on the outlet of the downdraft table or on the HEPA kit. The Silencer/Outlet duct is to be used as a silencer and prevents dust from blowing up from the floor at the same time. In case the Silencer/Outlet duct is used in a welding cabin, it also prevents air turbulence in the cabin and air disturbance to any adjacent cabin.

#### G. Outlet Connection Plate

Outlet plate for duct connection of downdraft table. The outlet connection plate is to be mounted at the outlet of the downdraft table instead of the outlet panel. Suitable for mounting of a flange Ø 12 inch or Ø 315 mm for hose or duct connection; flange to be sourced locally.

#### H. Working Light

Lighting fixture with 18W fluorescent light to be mounted to the back panel or backdraft panel. The working light provides a clear view to the workpiece. The cover can be hinged to facilitate exchange of the fluorescent light. The working light is activated upon turning on the main switch of the downdraft table.

#### I. Movement Sensor (DownFlex 400-MS/A only)

Automatic start/stop based on movement sensor, to be mounted on top of the back panel or backdraft panel. After detecting any movement above the work grid, the automatic start/stop device activates the fan to start running.

Start delay: 2 seconds. Stop delay: 60 seconds.

#### J. Welding Cable Sensor (DownFlex 400-MS/A only)

Metal clamp with built-in sensor that works as an automatic start/stop device. The clamp is to be connected to the ground cable of the welding machine. Suitable for welding applications only. The welding cable sensor operates on the basis of a change in the magnetic field of the ground cable of a welding machine. When welding starts, the welding cable sensor detects a signal, as a result, the fan starts running automatically.

Start delay: 2 seconds. Stop delay: 60 seconds.

#### K. Bench Vice Mounting Bracket

To be connected to the standard work grid of the downdraft table (bench vice not included). Mounting bracket to mount various types of bench vices. Only suitable for standard work grid. **See Figure A.13.**

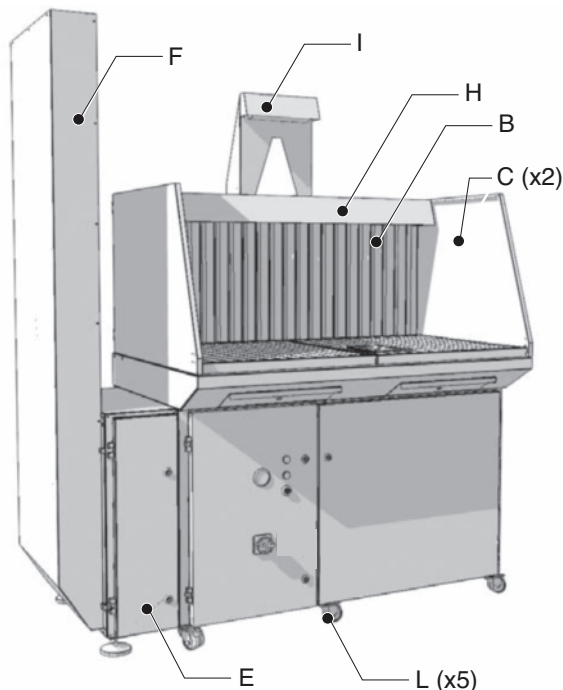
#### L. Wheel Kit

Consists of five swivel castors, two of which are equipped with brakes. These castors are to be mounted underneath the downdraft table. Wheel kit is to facilitate internal transport of the downdraft table. See **Wheel Kit** in **Installation** section of this manual.

#### M. Dust Tray Lid

Lid to cover the dust drawer underneath the main filter cartridges. Comes with a plastic bag, a face mask, and a pair of disposable gloves. When the dust drawer underneath the main filter cartridges needs to be emptied, the plastic bag and the personal protection equipment enable dust free removal.

FIGURE C.1 – ACCESSORIES



DOWNFLEX 200/400





## SAFETY PRECAUTIONS

### WARNING

Before carrying out service, maintenance and/or repair jobs, fully disconnect power to the machine.



Use Personal Protective Equipment (PPE), including safety glasses, dust mask and gloves to avoid injury. This also applies to persons who enter the work area.



**MOVING PARTS** can injure.

- Do not operate with doors open or guards off.
- Stop engine before servicing.
- Keep away from moving parts.



Have qualified personnel do all maintenance and troubleshooting work.



See additional warning information throughout this operator's manual.

## MAINTENANCE

The product has been designed to be reliable for extended periods of time with reasonable maintenance. In order to guarantee optimal performance level, regular maintenance and cleaning activities are required which are described in this section. If you observe the necessary safety precautions and carry out the maintenance at regular intervals, any problems occurring will be detected and corrected before they lead to a total breakdown.

The indicated maintenance intervals can vary depending on the specific working and ambient conditions. Therefore, it is recommended to thoroughly inspect the complete product once every year in addition to the indicated periodic maintenance.

### WARNING



Improper maintenance can cause fire. Always maintain the product according to the instructions of this manual.

### WARNING



Always switch OFF the system and disconnect the compressed air (if applicable) before carrying out the instructions below. First read the maintenance instructions at the beginning of this manual.

## SERVICE, MAINTENANCE AND REPAIRS

- Observe the maintenance intervals given in this manual. Overdue maintenance can lead to high costs for repair and revisions and can render the guarantee null and void.
- Always use tools, materials, lubricants and service techniques which have been approved by the manufacturer. Never use worn tools and do not leave any tools in or on the product.
- Safety features which have been removed for service, maintenance or repairs, must be put back immediately after servicing and that they still function properly.

### DOWNFLEX 200-M

The main filter cartridges of the DownFlex 200-M are disposable.

### DOWNFLEX 400-MS/A

The main filter cartridges in the DownFlex 400-MS/A are self cleaning by means of an automatically controlled compressed air system.

## PERIODIC MAINTENANCE

The maintenance activities in the table below are strictly reserved for well trained and authorized service engineers.

**TABLE D.1 – MAINTENANCE SCHEDULES**

COMPONENT	ACTION	FREQUENCY		
		Every Week	Every 2 Weeks	Every 12 Months
Prefilters (1st stage)	Check for damage and correct installation. Replace if necessary.	X		
	Clean prefilters using an industrial vacuum cleaner.		X	
Prefilters (2nd stage)	Check for damage and correct installation. Replace if necessary.	X		
	Clean prefilters using an industrial vacuum cleaner.		X	
Filter Cartridges	Check for damage and correct installation. Replace if necessary.	X		
Dust drawers	Check for damage and correct installation. Replace if necessary.	X		
	Empty the dust drawer underneath the main filter cartridges, preferably by using an industrial vacuum cleaner.		X	
Doors	Check for damage and correct installation. Replace if necessary.	X		
Outlet grid	Clean the outlet grid using an industrial vacuum cleaner.			X
<i>Plasma work grid</i>	<i>Check for damage. Replace damaged bars if necessary.</i>	X		
<i>Perforated steel spark arresters (underneath plasma work grid)</i>	<i>Check for damage and correct installation. Replace if necessary.</i>	X		

\* Text printed in italics refers to accessories.

## DISPOSAL

After life of the product, dispose of it in accordance with state or local regulations.

## HOW TO USE TROUBLESHOOTING GUIDE

### WARNING

Service and Repair should only be performed by Lincoln Electric Factory Trained Personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed throughout this manual.

This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three-step procedure listed below.

#### **Step 1. LOCATE PROBLEM (SYMPTOM).**

Look under the column labeled "PROBLEM (SYMPTOMS)". This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

#### **Step 2. POSSIBLE CAUSE.**

The second column labeled "POSSIBLE CAUSE" lists the obvious external possibilities that may contribute to the machine symptom.

#### **Step 3. RECOMMENDED COURSE OF ACTION**

This column provides a course of action for the Possible Cause, generally it states to contact your local Lincoln Authorized Field Service Facility.

If you do not understand or are unable to perform the Recommended Course of Action safely, contact your local Lincoln Authorized Field Service Facility.

### CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
<b>GENERAL</b>		
Fan does not start running. Downdraft table does not function.	1. No power supply.	1. Check power supply.
	2. Main switch off.	2. Turn on main switch.
	3. Motor defective.	3. Repair or replace motor.
	4. ON/OFF button defective.	4. Replace ON/OFF button.
	5. Fuse(s) defective	5. Check fuses F1, F2 and F3. Replace if necessary.
	6. Overload relay tripped.	6. Check current settings and reset overload relay.
	7. Overload relay defective.	7. Replace overload relay.
	8. Left and/or right door open.	8. Close and lock both doors.
	9. Safety switch in left and/or right door defective.	9. Replace safety switch(es).
Poor extraction capacity. Downdraft table does not function properly.	1. Filter cartridges saturated.	1. Replace both filter cartridges (*See Filter Cartridges and Prefilters). 2. Replace HEPA filter cartridge. (*See HEPA Filter).
	1. Magnehelic gauge defective (indicates value below 800 Pa).	1. Replace Magnehelic gauge and filter cartridges (*See Filter Cartridges and Prefilters). 2. Replace HEPA filter cartridge. (*See HEPA Filter).
	1. Sense of rotation of motor incorrect.	1. Invert connection of phases
	1. Prefilter (1st and/or 2nd stage) polluted.	1. Clean prefilters.
	1. Filter cartridge(s) torn.	1. Replace both filter cartridges (*See Filter Cartridges and Prefilters) and clean the outlet grid. 2. Replace HEPA filter cartridge. (*See HEPA Filter).
Dust or smoke coming out of the outlet. Pollution of the facility.		
Working light not lit. No light.	1. Main switch off.	1. *Turn on main switch.
	2. Cable is not connected.	2. *Connect cable (*See Figure A.11, item B).
	3. Fluorescent light is defective.	3. *Replace fluorescent light.
	4. Fuse is defective.	4. *Check fuse F4 and replace if necessary.

\* Accessory item.

### CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

**DOWNFLEX 200/400**



Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
<b>DOWNFLEX 400-MS/A ONLY</b>		
Fan does not start running. Downdraft table does not function.	1. No compressed air available.	1. Connect/repair compressed air supply.
	2. *Automatic start/stop (movement sensor or welding cable sensor) not connected.	2. *Connect cable of automatic start / stop (*See Figure A.11, item A).
	3. *Movement sensor is defective.	3. *Replace sensor.
	4. *Welding cable sensor not connected.	4. *Connect clamp of welding cable sensor to ground cable of welding machine.
Irregular filter cleaning. One of the filter cartridges is not being cleaned.	1. One of the membrane valves defective.	1. Replace both membrane valves.
Poor extraction capacity. No filter cleaning.	1. Membrane valve(s) defective.	1. Replace both membrane valves.
	2. Button RESET ALARM/MANUAL CLEANING defective.	2. Replace button RESET ALARM/MANUAL CLEANING.
MANUAL CLEANING button does not work. No filter cleaning.	1. Button was not pushed/held long enough.	1. Push/hold button for 5 seconds.
	2. Less than 20 operation hours after downdraft table came into use.	2. Try again later. Is not necessary to clean the filter cartridges.
	3. Less than 20 operation hours after filter replacement/reset.	3. Try again later. Is not necessary to clean the filter cartridges.
Buzzer emits an interrupted sound (2 seconds on - 2 seconds off). Filter cartridges polluted.	1. Pressure over the filter cartridges has reached 0.22 psi (1500 Pa.).	1. Push button RESET ALARM/MANUAL CLEANING to suppress buzzer. Push/hold the same button for 5 seconds to activate the filter cleaning system.
Buzzer emits an interrupted sound (2 seconds on - 5 seconds off). Filter cleaning system does not function.	1. No compressed air available.	1. Connect/repair compressed air supply.

\* Accessory item.

### CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

DOWNFLEX 200/400



**NOTE:** This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.



**NOTE:** This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.

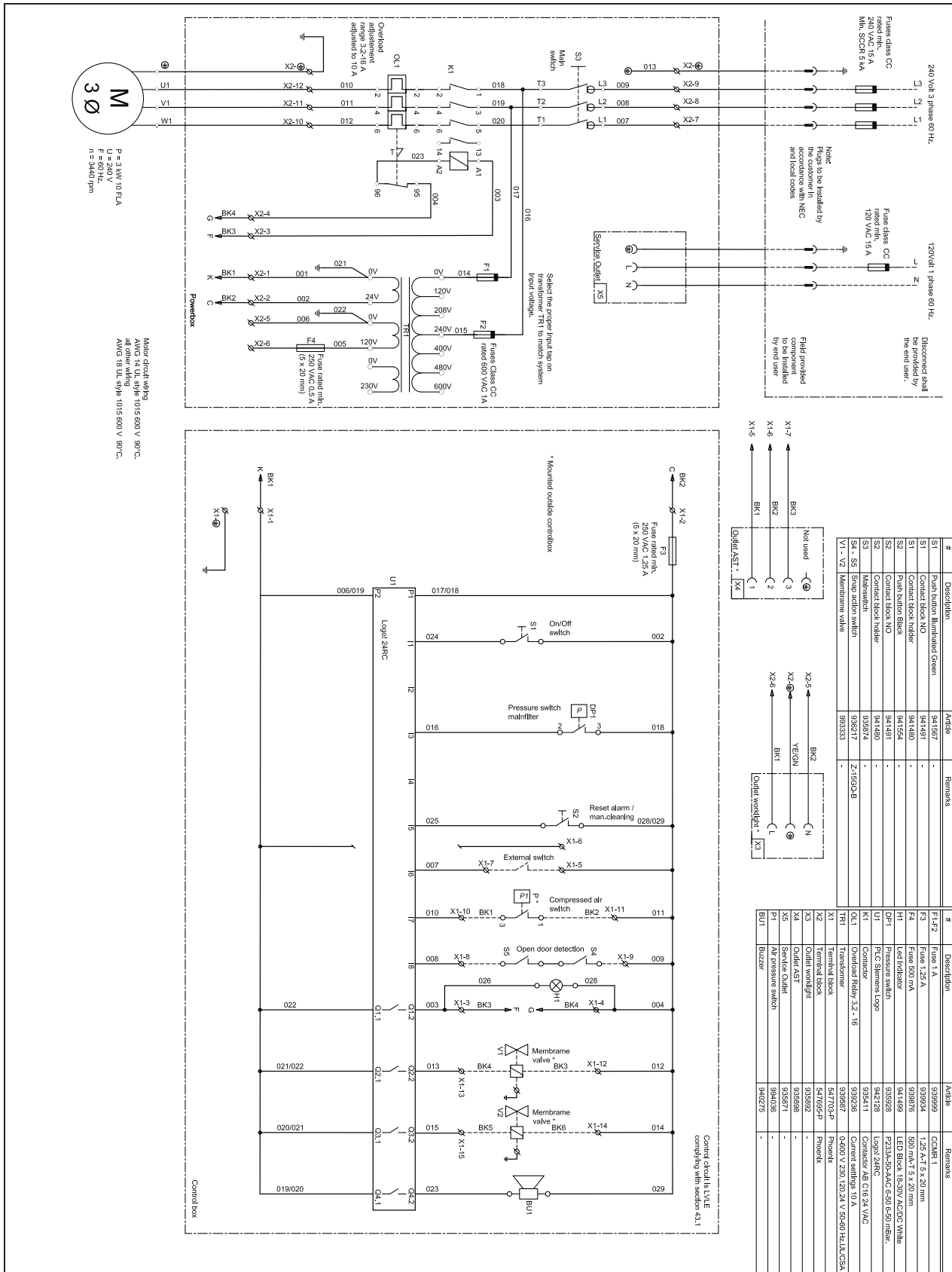




**NOTE:** This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.



FIGURE F.4 – 548636 DOWNFLEX 400-MS/A (208-240V/3~/60HZ) (USA)



**NOTE:** This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.



**NOTE:** This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.



<b>WARNING</b>	<ul style="list-style-type: none"> <li>● Do not touch electrically live parts or electrode with skin or wet clothing.</li> <li>● Insulate yourself from work and ground.</li> </ul>	<ul style="list-style-type: none"> <li>● Keep flammable materials away.</li> </ul>	<ul style="list-style-type: none"> <li>● Wear eye, ear and body protection.</li> </ul>
Spanish <b>AVISO DE PRECAUCION</b>	<ul style="list-style-type: none"> <li>● No toque las partes o los electrodos bajo carga con la piel o ropa mojada.</li> <li>● Aíslese del trabajo y de la tierra.</li> </ul>	<ul style="list-style-type: none"> <li>● Mantenga el material combustible fuera del área de trabajo.</li> </ul>	<ul style="list-style-type: none"> <li>● Protéjase los ojos, los oídos y el cuerpo.</li> </ul>
French <b>ATTENTION</b>	<ul style="list-style-type: none"> <li>● Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension.</li> <li>● Isolez-vous du travail et de la terre.</li> </ul>	<ul style="list-style-type: none"> <li>● Gardez à l'écart de tout matériel inflammable.</li> </ul>	<ul style="list-style-type: none"> <li>● Protégez vos yeux, vos oreilles et votre corps.</li> </ul>
German <b>WARNUNG</b>	<ul style="list-style-type: none"> <li>● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung!</li> <li>● Isolieren Sie sich von den Elektroden und dem Erdboden!</li> </ul>	<ul style="list-style-type: none"> <li>● Entfernen Sie brennbares Material!</li> </ul>	<ul style="list-style-type: none"> <li>● Tragen Sie Augen-, Ohren- und Körperschutz!</li> </ul>
Portuguese <b>ATENÇÃO</b>	<ul style="list-style-type: none"> <li>● Não toque partes elétricas e electrodos com a pele ou roupa molhada.</li> <li>● Isole-se da peça e terra.</li> </ul>	<ul style="list-style-type: none"> <li>● Mantenha inflamáveis bem guardados.</li> </ul>	<ul style="list-style-type: none"> <li>● Use proteção para a vista, ouvido e corpo.</li> </ul>
Japanese <b>注意事項</b>	<ul style="list-style-type: none"> <li>● 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。</li> <li>● 施工物やアースから身体が絶縁されている様にして下さい。</li> </ul>	<ul style="list-style-type: none"> <li>● 燃えやすいものの側での溶接作業は絶対にしてはなりません。</li> </ul>	<ul style="list-style-type: none"> <li>● 目、耳及び身体に保護具をして下さい。</li> </ul>
Chinese <b>警告</b>	<ul style="list-style-type: none"> <li>● 皮肤或湿衣物切勿接触带电部件及焊条。</li> <li>● 使你自己与地面和工件绝缘。</li> </ul>	<ul style="list-style-type: none"> <li>● 把一切易燃物品移离工作场所。</li> </ul>	<ul style="list-style-type: none"> <li>● 佩戴眼、耳及身体劳动保护用具。</li> </ul>
Korean <b>위험</b>	<ul style="list-style-type: none"> <li>● 전도체나 용접봉을 젖은 형갑 또는 피부로 절대 접촉치 마십시오.</li> <li>● 모재와 접지를 접촉치 마십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 인화성 물질을 접근시키지 마십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 눈, 귀와 몸에 보호장구를 착용하십시오.</li> </ul>
Arabic <b>تحذير</b>	<ul style="list-style-type: none"> <li>● لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجسدك أو بملابسك المبللة بالماء.</li> <li>● ضع عازلاً على جسمك خلال العمل.</li> </ul>	<ul style="list-style-type: none"> <li>● ضع المواد القابلة للاشتعال في مكان بعيد.</li> </ul>	<ul style="list-style-type: none"> <li>● ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.</li> </ul>

**READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.**

**SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.**

**LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.**

**LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.**

			
<ul style="list-style-type: none"> <li>● Keep your head out of fumes.</li> <li>● Use ventilation or exhaust to remove fumes from breathing zone.</li> </ul>	<ul style="list-style-type: none"> <li>● Turn power off before servicing.</li> </ul>	<ul style="list-style-type: none"> <li>● Do not operate with panel open or guards off.</li> </ul>	<b>WARNING</b>
<ul style="list-style-type: none"> <li>● Los humos fuera de la zona de respiración.</li> <li>● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.</li> </ul>	<ul style="list-style-type: none"> <li>● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.</li> </ul>	<ul style="list-style-type: none"> <li>● No operar con panel abierto o guardas quitadas.</li> </ul>	Spanish <b>AVISO DE PRECAUCION</b>
<ul style="list-style-type: none"> <li>● Gardez la tête à l'écart des fumées.</li> <li>● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.</li> </ul>	<ul style="list-style-type: none"> <li>● Débranchez le courant avant l'entretien.</li> </ul>	<ul style="list-style-type: none"> <li>● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.</li> </ul>	French <b>ATTENTION</b>
<ul style="list-style-type: none"> <li>● Vermeiden Sie das Einatmen von Schweißrauch!</li> <li>● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!</li> </ul>	<ul style="list-style-type: none"> <li>● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)</li> </ul>	<ul style="list-style-type: none"> <li>● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!</li> </ul>	German <b>WARNUNG</b>
<ul style="list-style-type: none"> <li>● Mantenha seu rosto da fumaça.</li> <li>● Use ventilação e exaustão para remover fumo da zona respiratória.</li> </ul>	<ul style="list-style-type: none"> <li>● Não opere com as tampas removidas.</li> <li>● Desligue a corrente antes de fazer serviço.</li> <li>● Não toque as partes elétricas nuas.</li> </ul>	<ul style="list-style-type: none"> <li>● Mantenha-se afastado das partes moventes.</li> <li>● Não opere com os painéis abertos ou guardas removidas.</li> </ul>	Portuguese <b>ATENÇÃO</b>
<ul style="list-style-type: none"> <li>● ヒュームから頭を離すようにして下さい。</li> <li>● 換気や排煙に十分留意して下さい。</li> </ul>	<ul style="list-style-type: none"> <li>● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切して下さい。</li> </ul>	<ul style="list-style-type: none"> <li>● パネルやカバーを取り外したまま機械操作をしないで下さい。</li> </ul>	Japanese <b>注意事項</b>
<ul style="list-style-type: none"> <li>● 頭部遠離煙霧。</li> <li>● 在呼吸區使用通風或排風器除煙。</li> </ul>	<ul style="list-style-type: none"> <li>● 維修前切斷電源。</li> </ul>	<ul style="list-style-type: none"> <li>● 儀表板打開或沒有安全罩時不準作業。</li> </ul>	Chinese <b>警告</b>
<ul style="list-style-type: none"> <li>● 얼굴로부터 용접가스를 멀리하십시오.</li> <li>● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 보수전에 전원을 차단하십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 판넬이 열린 상태로 작동치 마십시오.</li> </ul>	Korean <b>위험</b>
<ul style="list-style-type: none"> <li>● ابتعد رأسك بعيداً عن الدخان.</li> <li>● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.</li> </ul>	<ul style="list-style-type: none"> <li>● أقطع التيار الكهربائي قبل القيام بأية صيانة.</li> </ul>	<ul style="list-style-type: none"> <li>● لا تشغيل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه.</li> </ul>	Arabic <b>تحذير</b>

**LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.**

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的說明以及應該使用的銀焊材料，並請遵守貴方的有關勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.



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